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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,425	03/10/2004	Pradip K. Roy	TPS-008	4397
26875	7590	10/18/2005	EXAMINER	
WOOD, HERRON & EVANS, LLP 2700 CAREW TOWER 441 VINE STREET CINCINNATI, OH 45202			HU, SHOUXIANG	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

et

Office Action Summary	Application No.		Applicant(s)	
	10/797,425		ROY ET AL.	
	Examiner		Art Unit	
	Shouxiang Hu		2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29, 54 and 55 is/are pending in the application.
- 4a) Of the above claim(s) 4, 6, 7, 9, 10, 15-24, 28 and 29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 8, 11-14, 25-27, 54 and 55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/10/04 & 6/17/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 4, 6, 7, 28 and 29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 20050729.

Applicant's arguments against the restriction/election requirement among Species A through E in the above paper are acknowledged. After reconsideration, the restriction/election requirement among Species A through E as set forth in the previous office action is hereby withdrawn. And, a species election/restriction is set forth below.

2. This application contains claims 1-3, 5, 8-27, 54 and 55 further directed to the following patentably distinct species of the claimed invention:

Species 1, embodiment of Fig. 5.

Species 3, embodiment of Fig. 5A.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 1 is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An

argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of **any of the independent claims**, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(l).

3. During a telephone conversation with Kristi L. Davidson on October 11, 2005, a provisional election was made without traverse to prosecute the invention of Species 1. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-3, 5, 8, 11-14, 25-27, 54 and 55 are found readable on the elected species. Claims 4, 6-7, 9-10 and 15-24 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being unreadable on the elected species.

4. Accordingly, claims 1-29, 54 and 55 are pending in this application; and claims 1-3, 5, 8, 11-14, 25-27, 54 and 55 remain active in this office action.

Claim Objections

5. Claims 13, 14 and 25 are objected to because of the following informalities and/or defects:

In claims 13 and 14, the term of "or" should read as: --and--.

Claim 25 recites the term of "said forming", but fails to clarify which of the terms of "forming" recited in claim 2 it refers to.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 5, 8 and 54 are rejected under 35 U.S.C. 102(b) as being anticipated by Uejima (Uejima et al., Highly Reliable Poly-SiGe/Amorphous-Si Gate CMOS; Electron Device Meeting; IEDM Technical Digest; pp 445-448; 12/10/2000; of record).

Uejima discloses a method of fabricating a SiGe thin layer semiconductor structure (Figs. 1 and 2), comprising: providing a substrate (Si) having a dielectric layer (SiO₂) thereon to a process system that naturally includes a process chamber, as it is naturally required for the formation of the other layers thereon; forming the other layers including: forming a SiGe layer over the dielectric layer, wherein the SiGe layer has a graded Ge concentration (see the curve that has a peak Ge concentration of about 27%); and forming Si cap layer (at least the top portion of the poly-Si layer).

Regarding claim 8, the graded Ge curve naturally has a point at which the Ge concentration is below 10% (see Fig. 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 11, 26-27 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uejima.

The disclosure of Uejima is discussed as applied to claims 1-3, 5, 8 and 54 above.

Regarding claims 11 and 55, Uejima does not expressly disclose that the process chamber can be either for a single wafer or for a batch of wafers. However, it is noted that it is art known that the depositing process can be performed in either of the two types of process chambers, depending on the considerations of the required process quality, speed, and cost.

Therefore, it would be well within the ordinary skill in the art at the time the invention was made to use the method of Uejima for making a semiconductor device with the forming steps being implemented in either a single-wafer chamber or a multiple-wafer chamber, so that a method for forming a semiconductor device with desired process quality, speed, and/or cost would be obtained.

Regarding claims 26 and 27, Uejima does not expressly disclose that the method can further comprise a step of providing a process chamber pressure of less than 100 Torr or 1 Torr. However, it is noted that it is art known that the depositing process can be performed in such recited pressure; and that the process chamber pressure is a well recognized parameter of importance subject to routine experimentation and optimization.

Therefore, it would be well within the ordinary skill in the art at the time the invention was made to use the method of Uejima for making a semiconductor device with the process chamber pressure once being provided at the recited pressure, so that

a method for forming a semiconductor device with optimized depositing process would be obtained.

8. Claims 12-14 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uejima in view of Sagnes (US 5,998,289).

The disclosure of Uejima is discussed as applied to claims 1-3, 5, 8, 11, 54 and 55 above.

Uejima does not expressly disclose that the SiGe layer and the Si cap layer can be formed with a CVD process with the recited gases and/or temperature. However, one of ordinary skill in the art, as evidenced in Sagnes (col. 5, lines 43-64), would readily recognize that such CVD process is commonly used in the art for depositing a SiGe layer or a Si layer with desired quality and/or cost.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the CVD method of Sagnes into the method of Uejima, so that a method for forming a semiconductor device with desired quality and/or cost would be obtained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH
October 13, 2005



SHOUXIANG HU
PRIMARY EXAMINER